

THE REDUVIIDAE OF KARTABO
BARTICA DISTRICT, BRITISH GUIANA.*

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(Figs. 46-47.)

INTRODUCTION.

The first of this series of communications on the Rhynchota of Kartabo dealt with the Membracidae of the area and was published in 1925. (*Zoologica*, vol. vi, no. 3.) The following study of the Reduviidae is based partly on my own collection made between June and September, 1922; and partly on the collection formed by other workers at the Station in previous years, and which has been kindly placed at my disposal by Mr. Beebe. In addition I have included certain species that I collected in October along the Demerara and Berbice Rivers, and which have not yet been recorded from Kartabo, although it is probable that they occur there also. Where no locality is given in the following pages, it is to be understood that the species in question was collected at Kartabo Point.

The types of the new species described here are in the British Museum of Natural History. As in my previous paper, the synonymy makes no pretension to completeness but indicates merely where a reliable earlier description can be found. The following abbreviations have been used:

H. F. = Hemiptera Fabriciana
E. H. = Enumeratio Hemiptorum
B. C. A. = *Biologia Centrali-Americana*.
} Stal, *K. Sven. Vet-Akad. Handl.*

GENERAL OBSERVATIONS.

Thanks to the labours of the compilers of the *Biologia Centrali Americana*, the hemipterous fauna of Central America has been recorded, and the results of the collections examined and published, in greater detail than has been possible for much of the even larger forested region of northern South America which lies east and south of the valley of the Orinoco, and includes the greater part of the

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basin of the Amazons. Hence attempts to compare the Reduviid fauna of Central America and Brazil are probably misleading; and any inferences drawn therefrom will require modification as new knowledge is obtained as to the range of many species, and the determination between geographical races and colour varieties becomes more exact. How much more remains to be discovered from the point of view of distribution alone may be judged from the fact that even the small area of Kartabo Point has added to the Guiana list ten species already described but not previously recorded from the country. If deductions from the small collection under review are permissible, it may be suggested that three elements go to make up the Reduviid fauna of Guiana. There is a northern element of species belonging to groups whose headquarters are in Central America, and a southern or Brazilian element of forms known chiefly from the Amazon region. The third and largest element consists of species which are widely distributed over the tropics of the New World. There are numerous genera, and species also, which range from Mexico to Southern Brazil and even to the Argentine. Some of these are variable insects, but in most cases the varieties can as yet hardly be assigned to different geographical boundaries.

Genera such as *Saica*, *Gnathobleda*, and *Sinea* appear to have their headquarters in Central America. Others such as *Mestor*, *Mindarus*, *Calliclopius*, *Zirta*, etc. suggest a Brazilian element in the Guiana fauna. On the whole, ignoring the wide ranging forms, the southern element seems to prevail over the northern in the area under review. Thus of the forty-one species (belonging to thirty-one genera) in the collection which have been previously described, sixteen species (thirteen genera) are widely distributed in the tropics from Brazil to Mexico. Seven species (seven genera) have been hitherto recorded from Central America and Guiana only, but five of these belong to widely distributed genera. Twelve species (seven genera) suggest the Brazilian element, and five of these genera are not included in the B. C. A. To these should doubtless be added six species (six genera) which have hitherto been recorded from Guiana only, and three of these genera are not so far known in Central America.

To sum up—twenty-three of the thirty-one genera recorded from Kartabo are included in the B. C. A.; but this does not indicate

so much a preponderance of Central American forms in the area, as the great range of many neo-tropical Reduviidae. In fact the evidence, such as it is, is much what we might expect from a study of the map of South America. The Amazons valley, with the Guiana coast lands and the valley of the Orinoco, form a continuous homogeneous zoogeographical region, closed at its northwest angle by the Cordilleras of Venezuela and Colombia. This line of open hilly country has acted as a natural oecological barrier to the range of certain species, determining that this family at all events shall be divisible into a Central American and a Brazilian group, and that the latter shall predominate in the fauna of Guiana.

From the point of view of its Reduviidae, the collecting ground at Kartabo Point consists of two formations only—the shade jungle, and the clearings and forest trails. Of the two, the second is incomparably the richer both in species and individuals. Those found in the dark jungle are for the most part obscure bark-living forms such as *Ghilianella*, or *Leogorrus*; while the shrubs bordering the clearings and trails are populated with *Zelus*, *Notocyrtus*, and *Xystonyttus*, and the open ground and herbage provide *Ricolla*, *Spiniger*, *Phymata*, etc. In fact the Reduviidae of Kartabo could be divided oecologically into bark-loving and foliage loving groups. The distinction is more one of mode of life than of affinities. Thus *Apiomerus hirtipes*, though it sometimes appears in light places, prefers dark termite-infested timber in the forest gloom; but *Calliclopius nigripes* according to my experience, is a light loving species and taken only on low foliage round the clearings. Food is probably the most important factor in the local distribution of these predatory bugs, but our knowledge of the subject is less than could be wished. Reduviidae, though often swift upon the wing, are usually sluggish hunters and it is not easy to determine their natural prey. In captivity I found that their tastes were more catholic than I had supposed, but experiments on the appetites of captive animals are not always reliable.

The three great classes of food for insects in the tropical forest as elsewhere are of course the living tissues of animals, the living tissues of plants, and the detritus formed by the decomposition of both. To seize and crush the tissues, especial organs are necessary, and only certain insects possess the requisite apparatus. Such are most adult Coleoptera and Orthoptera, some specialized adult forms of other families, and the larval and nymphal stages of most families

except the Rhynchota. Bugs at every stage, and the adults of all Lepidoptera, most Diptera and some Hymenoptera etc., like the stork in the fable, can only imbibe liquid nourishment. For these the tropical forest contains two easily tapped sources of supply of animal and plant juices respectively. For carnivorous forms, there are termites. Ubiquitous, abundant, and relatively defenseless, their plump bodies are the staff of life to many animals besides insects, and they are among the most persecuted creatures in the jungle. Phytophagous forms can readily obtain plant sap in the shape of the "honey-dew" excreted by Homoptera, which, though not a complete diet in itself, offers a concentrated and readily assimilated food. Honey-dew as an oecological factor in the tropical forest has received less attention than it deserves. Together with the extra-floral nectaries which are characteristic of so many jungle plants, it partly takes the place of the nectar of flowers which are comparatively absent in the forest below the level of the tree tops. Fancifully the vegetation of the rain-forest may be regarded as a country with an abundant underground water supply and inhabited by a huge thirsty population which flourishes only by assiduous attention to millions of little suction pumps. The water supply is the plants' sap; the pumps are the hosts of Membracids, Jassids, Coccids, etc. who ceaselessly suck up the sap and then convert and extrude it in shining sticky flecks upon the leaves; the population are the innumerable flies, bees, ants, moths and butterflies, etc. which feed greedily on this saccharine food.

Several of the Kartabo Reduviidae feed mainly if not exclusively on termites. Such are *Leogorrus litura*, *Apiomerus hirtipes*, *Sorglana pallens*; and some of the Ploiariinae such as *Ghilianella brevicornis* will eat them, at any rate in captivity. But our list contains a number of species which haunt open foliage in clearings and trails through the secondary growth rather than deep shade forest and standing timber. The prey of these insects is difficult to determine. *Debilis fraudulenta* for instance has been known to suck Jassid nymphs; and I have obtained individuals of *Zelus pallidinervis* and *Zelus erythrocephalus* feeding on small flies and a medium-sized spider respectively. Some of these foliage loving species, such as *Zelus*, *Repipta*, *Ricolla* etc. certainly supplement an insect diet with honey-dew from Homoptera, and with the secretion from the extra-floral nectaries of plants. *Notocyrtus gibbus* in particular can

be captured with certainty on any of the jungle plants which are well provided with these organs. In no case have I observed saprophytic feeding among the Kartabo Reduviids; and this is somewhat remarkable considering the amount of decaying organic matter present in the forest, and that some of the Coreidae of the locality (for instance *Hyalymenus pulcher*) seem to live largely, not on sap, but on the liquid from the decomposition of vegetable matter in the axils of the leaves of forest plants. Several of the Kartabo Reduviids are commonly taken at light. Such are *Mindarus basalis*, the three species of *Rasahus*, *Rhodnius prolixus*, *Sirthenia stria* and *Eratyrus mucronatus*. *Gnathobleda maculosa* has also been taken in this way.

The neotropical Reduviidae offer such remarkable instances of Müllerian mimicry that it is rather strange that they have not been more studied from this point of view. In this respect they offer a contrast to the two dominant vegetable-feeding families of bugs of the same region. The Coreidae and Pentatomidae possess as a rule either procryptic¹ or aposematic (simple warning) colouration, and examples of mimicry are not common among them. Some predatory bugs have a procryptic appearance—*Dysodius lunatus* and *Sorglana pallens* are almost indistinguishable from the flakes of bark over which they glide; *Phymata erosa* is invisible among the green panicles of the grass to which it clings. Many others are gaudy and conspicuous in colouring, such as *Acanthiscium superbus*, *Mindarus basalis*, and *Calliclopius nigripes*. But a number of species whose form and colour can be classified are Müllerian mimics, and at Kartabo they form their most striking associations with Hymenoptera.

The three outstanding groups of the area are: the Pompilid group, the Ichneumonid group, and the Meliponine group. The models of the first association are the great jungle Pompilidae. Some of the genera *Chrysobapta*, *Priocnema*, etc. possess tawny wings and antennae and black metallic bodies. In both form and colour, *Spiniger spinidorsis* bears a remarkable resemblance to these hunting wasps, which was noticed first by Bates and later by Belt and others. Besides the Pompilid and *Spiniger spinidorsis*, this association at Kartabo includes the yellow and black Locustid *Scaphura nigra*, a

¹ The convenient terms proposed by Poulton to define different kinds of form and colour are used here.

large black fly (sp?) with yellow antennae, and a Mantispid. (Beebe, *Zoologica*, vol. vi, no. 1.) The wasps are very common in the area, but the rest of the participants are comparatively rare. *S. spinidorsis* comes next in point of numbers, but it is decidedly scarce. The wasp models are probably the least molested insects in the jungle, and their powerful flight and strong sting are well advertised by their conspicuous colouring. The bug exudes a strong odour when handled, and its sharp thoracic spines are perhaps an additional defense. It is not known what protection the other members of the association have, but we are probably justified in regarding them as Müllerian rather than as Batesian mimics. Two other species of the genus *Spiniger* found at Kartabo belong to Müllerian associations also centering around hunting wasps. *S. nigripennis* in appearance and haunts resembles some of the large black Pompilidae which are common in the clearings and forest trails. The Syntomid moth *Pompiliopsis tarsalis* is another member of this association, and resembles its hymenopteron model both in appearance and behaviour. *Spiniger mustelinus* again is linked to a third form of hunting wasp typified by *Sphex ichneumoneus* which is yellow in colour. There are no more striking examples of convergent colour pattern for mutual protection than that of these three bugs of the same genus, almost identical in structure and habits but differing in conformity with the three colour types of wasps of different families which inhabit the same area. As Poulton has pointed out, Müllerian mimicry is not mimicry in the strict sense of the word but is really the possession in common of warning colouration by unrelated forms. The larger the number of participants in a Müllerian association, the wider is the advertisement of that particular type and the greater the advantage to the members. The genus *Spiniger* is of great interest in this respect, and is almost divisible into two groups: hymenopteron mimics and forms which possess only simple warning (aposematic) colouration. With sufficient material it seems even possible to trace the line of evolution from one to the other. The members of the former group agree in their black and yellow colouring, but within these limits every variation exists, and probably several species are no more than varieties of the one or other of the three major types. The livery has been patented as the corollary of a sting or of a noxious taste and exact adherence to details does not greatly matter; for the

enemy who has once fallen victim to either will take no risks a second time. The modelling of the female abdomen of these bug wasp-mimics is specially remarkable. The constricted "waist" is passably simulated, and the curved and pointed terminal segments are a wonderful reproduction of the hymenopterous sting. Comparison of the female genitalia of *Spiniger* with that of some other Acanthaspidinae such as *Leogorrus* would suggest a striking modification of external structure to appearance were it not that our ignorance of the life-history of these bugs makes it possible that perhaps the form of the abdomen is not really the imitation of the wasp's sting but is actually a comparable organ, in use as an ovipositor.

A second hymenopteron-heteropteron Müllerian association which is widely spread in tropical America is that focussed round some of the big Ichneumonoidea with yellow-hyaline banded wings and red bodies. The bug participants at Kartabo belong to the genera *Xystonyttus*, and *Graptocleptes* among the Reduviidae, and to some of the *Monalonion* group among the Miridae.

The third association between these two great orders is that of certain Meliponine bees and the genus *Notocyrtus*. The broad flat head and thorax of the bee are reproduced by the angular inflated pronotum of the bug, whose own head is almost concealed in life; and the hyaline hemelytra and dilated hind-tibiae of *Notocyrtus* bear out the resemblance to the bee with its "pollen-baskets" on the legs. The bugs live on open foliage, and may often be taken sipping nectar, or honey-dew from Homoptera colonies. The movements of the bug are quite bee-like, and I have several times been deceived by the mimicry. The Meliponinae visit the same places in search of nectar or resin, and it is not uncommon to see model and mimic side by side. At Kartabo the dominant Meliponinae are black, and the yellow forms seem to be rather scarce, but both yellow (*N. dorsalis*) and black (*N. gibbus*) bugs are found. Meliponine bees are stingless, and at first I was at a loss to account for the advantage to the hymenoptera in this association, especially as they are so much more abundant than the bugs. However Wheeler (*Psyche*, no. 20, 1913) has recorded that a Central American species can emit a fluid caustic enough to burn the human epidermis, and it is quite likely that others also possess this power, which would render them unpalatable to birds, etc.

LIST OF SPECIES.

Series ANONYCHIA.

Superfamily REDUVIOIDEA.

Phalanx REDUVIIFORMES.

Family I. MACROCEPHALIDAE.

Subfamily PHYMATINAE.

Phymata erosa (Linn.) var. *fasciata* (Gray)..... p. 137

Family II. REDUVIIDAE.

Subfamily I. PLOIARIINAE.

Gardena faustina McAtee..... p. 139

Ghilianella andersoni, sp. nov..... p. 139

Ghilianella brevicornis, sp. nov..... p. 139

Ghilianella glabrata McAtee..... p. 139

Subfamily II. SAICINAE.

Saica recurvata Stal..... p. 139

Subfamily III. STENOPODINAE.

Gnathobleda maculosa, sp. nov..... p. 140

Pnirontis demerarae, sp. nov..... p. 140

Pnirontis infirma Stal..... p. 141

Stenopoda culiciformis (Fabr.)..... p. 141

Subfamily IV. ACANTHASPIDINAE.

Eratyrus mucronatus Stal..... p. 141

Leogorrus litura Stal..... p. 141

Mestor geniculatus (Burm.)..... p. 142

Vescia adamanta, sp. nov..... p. 142

Rhodnius prolixus Stal..... p. 142

Sorglana pallens (Laporte)..... p. 142

Spiniger mustelinus, sp. nov..... p. 143

Spiniger nigripennis Stal..... p. 143

Spiniger rubropictus (H-Sch.)..... p. 144

Spiniger spinidorsis (Gray)..... p. 144

Subfamily V. PIRATINAE.

Melanolestes morio (Erichs.)..... p. 144

Rasahus albomaculatus (Mayr.)..... p. 144

Rasahus biguttatus (Say)..... p. 144

Rasahus haematus (Fabr.)..... p. 144

Rasahus sulcicollis Serv..... p. 144

Sirthenia stria (Fabr.)..... p. 144

Subfamily VI. ECTRICHODIINAE.

<i>Mindarus basalis</i> Stal.....	p. 145
<i>Pothea lugens</i> (Fabr.).....	p. 145
<i>Zirta simillima</i> Distant.....	p. 145

Subfamily VII. APIOMERINAE.

<i>Apiomerus hirtipes</i> (Fabr.).....	p. 145
<i>Calliclopius nigripes</i> (Linn.).....	p. 146
<i>Heniartes flavicans</i> (Fabr.).....	p. 146
<i>Manicocoris rufipes</i> (Fabr.).....	p. 146
<i>Micrauchenus lineolus</i> (Fabr.).....	p. 146

Subfamily VIII. HARPACTORINAE.

<i>Acanthiscium superbus</i> , sp. nov.....	p. 146
<i>Debilis fraudulenta</i> , sp. nov.....	p. 147
<i>Graptocleptes fasciata</i> (Fabr.).....	p. 149
<i>Notocyrtus dorsalis</i> (Gray) var. <i>flavolineatus</i> Stal.....	p. 149
<i>Notocyrtus gibbus</i> (Fabr.).....	p. 149
<i>Notocyrtus triareatus</i> Stal.....	p. 149
<i>Montina testacea</i> Stal.....	p. 149
<i>Repipta affinis</i> , sp. nov.....	p. 149
<i>Repipta flavicans</i> Am. & Serv.....	p. 150
<i>Repipta mucosa</i> Champion.....	p. 150
<i>Ricolla pallidinervis</i> Stal.....	p. 150
<i>Sinea caudatum</i> Champion.....	p. 150
<i>Xystonyttus ichneumoneus</i> (Fabr.).....	p. 150
<i>Xystonyttus nugax</i> (Burm.).....	p. 150
<i>Zelus (Diplodus) araneiformis</i> , sp. nov.....	p. 151
<i>Zelus erythrocephalus</i> Fabr.....	p. 151
<i>Zelus (Diplodus) formosus</i> , sp. nov.....	p. 151
<i>Zelus (Diplodus) kartabensis</i> , sp. nov.....	p. 152
<i>Zelus nugax</i> Stal.....	p. 152
<i>Zelus (Diplodus) pallidinervis</i> , sp. nov.....	p. 153
<i>Zelus sphegeus</i> Fabr.....	p. 153
<i>Zelus (Diplodus) rufigeniculatus</i> , sp. nov.....	p. 153
<i>Zelus (Diplodus) tristis</i> , sp. nov.....	p. 154

Subfamily PHYMATINAE.

Phymata crosa (Linn.) var. *fasciata* (Gray).

Phymata crosa, var. *fasciata*, Champion, *B. C. A., Heteroptera, II, 1901.*

According to Champion, this is a North and Central American form and has not yet been recorded from Guiana. The examples in this collection, though rather smaller than those he figures, appear to belong to this variety. This species was not common at Kartabo in the summer, but was more frequent near the coast. It occurred abundantly in a coconut palm swamp beside the

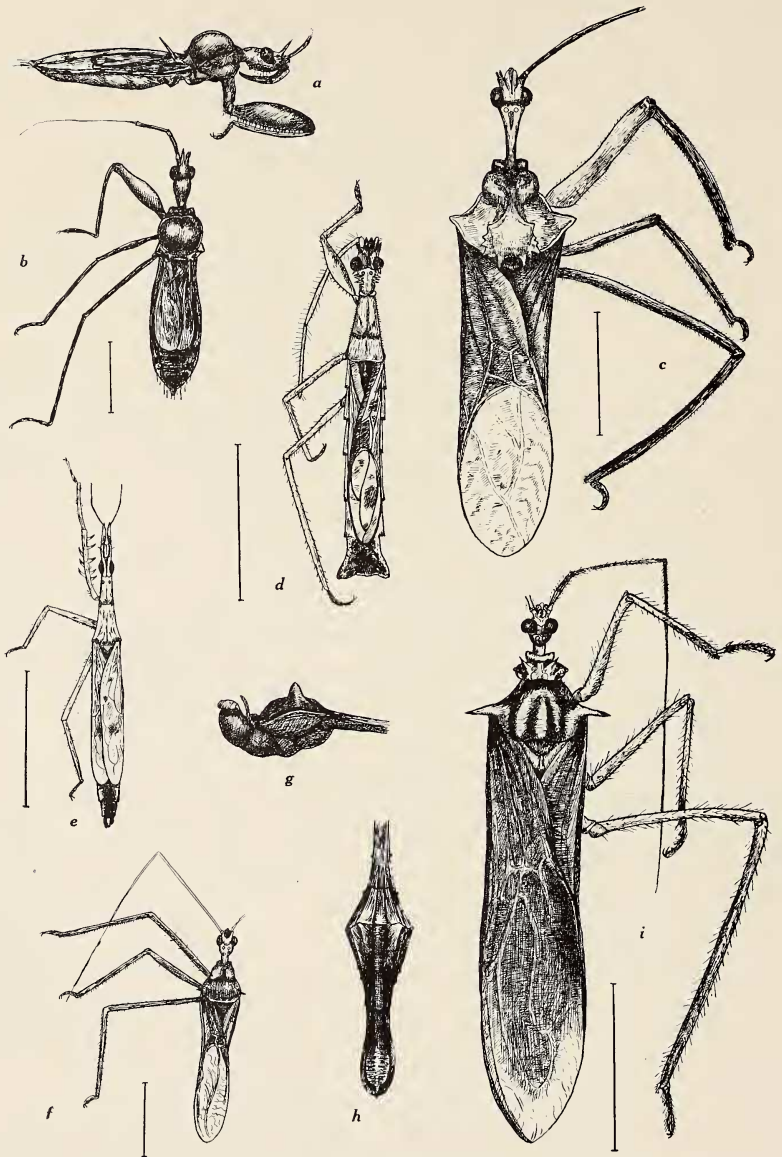


Fig. 46. a, b, *Vescia adamantina*; c, *Acanthiscium superbus*; d, *Gnathobleda maculosa*; e, *Pnirontis demerarae*; f, *Repipta affinis*; g, *Ghilianella brevicornis*, apex of abdomen of male; h, *Ghilianella andersoni*, apex of abdomen of male; i, *Spiniger mustelinus*, female.

Demerara River at Diamond Plantation. With their raptorial forelegs, the insects cling to the panicles of flowering grasses, amid which their variegated green colouring is almost invisible.

Gardena faustina McAtee.

Gardena faustina, McAtee, *Proc. U. S. Nat. Mus.*, vol. 67, 1926.

One male taken, 12. 10. 22. In this example in life the mesothorax was black and the rest of the body was pale chestnut.

***Ghilianella andersoni*, sp. nov.**

(Fig. 46, h).

A single example taken on a tree trunk in dark swamp jungle in September is provisionally described here as new. It is evidently close to *G. pascoei* Bergröth, but differs in certain particulars. The head and thorax are finely granulated and covered with patches of short castaneous hair. The seventh abdominal tergite is rounded, and terminates apically with a short, abrupt, and almost spine-like process which scarcely reaches the border of the hypopygium. The abdomen is widest across the fourth tergite. The posterior margins of abdominal sternites 2-5 are slightly, and the sixth is more markedly, sinuate. The spiracle of the seventh segment is pedunculate and not included within the border of the segment.

I have pleasure in naming this species after Mr. J. Anderson of Plantation Diamond, in recognition of his kind assistance during my residence in the colony.

***Ghilianella brevicornis*, sp. nov.**

(Fig. 46, g).

This form may be only a variety of *G. mirabilis* McAtee, described from the Amazons region. It differs in that the horns of the abdominal expansion of the male are shorter and more flattened in the dorso-ventral plane and more carinate on the outer margin. The width between the diverging tips of the horns is only 2.5 mm., as against 5.0 mm. in *G. mirabilis*.

Ghilianella glabrata McAtee.

Ghilianella glabrata, McAtee, *Proc. U. S. Nat. Mus.*, vol. 67, 1926.

A female taken 1. 8. 22, on a tree trunk in dark shade forest on the Cayuni River.

Saica recurvata (Fabr.).

Saica recurvata, Stal, *H. F.*, I, 1868.

This species is not uncommon at Kartabo from July to September. It frequents sunny clearings with low thick vegetation upon which it rests in conspicuous places and takes wing only with reluctance. The examples from this locality are somewhat pale in colour, and yet are too dark to be assigned to the allied species, *S. ochracea*, Distant.

Gnathobleda maculosa, sp. nov.

(Fig. 46, d).

Elongate, narrow, pale greyish ochreous; head, pronotum and scutellum pitchy-brown; rostrum spotted with brown; a narrow dark line extending along the sides of the thorax above the coxae from the prosternal spines; a dark median line extending from the anterior margin of the mesosternum to the apex of the abdomen; the dorsal surface of the abdomen, especially at the posterior end, spotted with dark brown. Elytra with pallid venation, but with the corium, clavus, and membrane boldly spotted with brown, and with a broad brown patch at the inner distal angle of the corium. Antennae pale, with the first and second joints infuscate. Legs pale ochreous, sparsely spotted with pale brown and a conspicuous dark spot at the tibio-tarsal articulation.

Head sub-oblong, the ante-ocular portion a little longer than the post-ocular, deeply transversely sulcate behind the eyes; eyes very prominent; antenniferous tubercles furnished with small spines and a pair of sharp diverging frontal tubercles between them; post-ocular margin with four or five small simple spines; rostrum with the first joint equal in length to the second and third together; antennae thickly hairy, the first and second joints equal in length.

Prothorax oblong, narrow and sub-tuberculate at the anterior angles, spinous along the lateral margin, somewhat rugose behind; prosternum with two sharp forward-projecting spines in front and the pleura with spinous dilatations above the coxae.

Scutellum triangular, acuminate, longer than wide, furnished with a blunt porrect conical tooth which has a minute tubercle immediately behind it.

Abdomen very elongate, narrow, oblong, slightly notched at the lateral expansions, and with the terminal segments somewhat dilated and flattened laterally.

Anterior coxae inserted far forward; trochanters unarmed; anterior femora incrassate, roughly spinose, and hirsute; tibiae without spongy fossae; tarsi with the apical joint much the longest, the basal joints doubtfully distinct.

Elytra reaching to the apex of the penultimate abdominal segment.

Long. 19 mm. Lat. 4 mm.

Type: Male.

Two males recorded from Kartabo—one undated, the other caught at the laboratory light in June, 1922.

Pnirontis demerarae, sp. nov.

(Fig. 46, e).

Elongate, narrow, sub-fusiform; pale testaceous yellow, darker on the sides of the thorax and dorsum of the abdomen, femoral and tibial spines annulated with brown.

Head elongated, as long as the pronotum, the post-ocular portion rather shorter than the ante-ocular portion, with a median sulcus; eyes not prominent; ocelli, small, red; genae very prominent; basal joint of the antenna short, blunt, extending less than one third beyond the articulation of the second

joint; the latter when extended backward attaining the anterior margin of the eye; post-ocular spines six in number, the fifth bifurcated. Pronotum granulate, rugose, longer than broad, narrow in front, carinate laterally, with a pair of stout sharp spines projecting forward from the anterior angles, and with a shallow median sulcus; hind margin somewhat swollen and depressed.

Scutellum small, and with a small tooth at the apex.

Abdomen tapering back from the fourth segment, the first five segments carinate below; the first genital segment concave at the apex, the second forceps-shaped. Legs short and pilose; anterior femora furnished on the outer edge with five, and on the inner edge with four long spines; tibiae armed on the inner side with three stout spines of which the first is much the longest; and on the inferior surface, close to the tarsal joint, is a compressed pilose tubercle. Elytra reaching the base of the fifth abdominal segment; wings white, semihyaline.

Long. 19 mm. Lat. 2.5 mm.

Type: Female.

A single example was taken by sweeping at Diamond Plantation (Demerara) in October. This species differs from *P. spinimanus* Champion in the colour, greater size, number and arrangement of the spines of the legs, etc.

Pnirontis infirma Stal.

Pnirontis infirma, Stal, *O. V. A. F.*, 1859.

A female example taken at Kartabo in June seems to be a dark slender form of this species.

Stenopoda culiciformis (Fabr.).

Stenopoda culiciformis, Stal, *H. F.*, 1868.

This species is not uncommon at Kartabo and occurs chiefly on the tops of grasses and on low shrubs in sunny clearings. When handled, it smells pleasantly of pineapple. The orange dorsum is concealed in the resting attitude, and the insect then bears a curious accidental resemblance to some of the straw-coloured short-horned grasshoppers which are common in the same places. The likeness is enhanced by the angular flexure of the long hind legs, and by the antennae, which are bent down sharply so as to expose to view only the thickened basal portion.

Eratyrus mucronatus Stal.

Eratyrus mucronatus, Stal, *Berl. Ent. Zeit.*, III, 1859.

This species is occasionally taken at light at the Station.

Leogorrus litura (Fabr.).

Leogorrus litura, Stal, *H. F.*, I, 1868.

L. litura lives on and under the bark of standing timber, and sometimes occurs in some numbers on the same tree. The nymphs, like others of this group, may be found in termite nests; and as they exude a viscous fluid, their bodies become covered with dust and fragments of wood until they resemble nothing so much as small animated rubbish heaps.

Mestor geniculatus (Burm.).

Mestor geniculatus, Stal, *Berl. Ent. Zeit.*, III, 1859.

Mestor n. n. Lamus, Kirkaldy, *Ent.*, 1904.

Two examples dated 10. 10. 20, and 12. 6. 22 respectively. Both are somewhat dark in colour.

***Vescia adamanta*, sp. nov.**

(Fig. 46, a-b).

Moderately stout, brachypterous, non-ocellated; rusty black; antennae, legs, and spine of scutellum ferruginous; a spot on the outer margin of the membrane, the claval suture, and some large spots on the dorsum and sides of the abdomen pale ochreus; head, pronotum, and fore femora polished and shining; underparts of body and the legs densely clothed with short light hairs, the anal region and the under surface of the fore femora with stiffer and longer hairs. Head oval, the post-ocular a little longer than the ante-ocular portion, swollen behind the eyes and then constricted at the neck, furnished with a straight forward projecting spine between the eyes; eyes not more prominent than the lateral post-ocular margins of the head; antennae shorter than the body, with the first and second joints thickened, the first claviform, the second fusiform and rather more than half as long again as the first, the terminal filiform joints thickly beset with hairs.

Pronotum with the anterior lobe inflated, rounded, declivous behind, with a faint median sulcus, and with a carinated depression extending on either side of the disc horizontally; furnished on the anterior aspect of the prosternum with two minute setiferous tubercles; posterior lobe short, sub-pentagonal, and armed with four short stout dorso-ventrally flattened divergent tubercles or teeth. Scutellum triangular, rugose, and furnished with a long straight backward projecting spine. Metasternum and first five sternites of the abdomen carinate. Elytra extending almost to the base of the sixth abdominal tergite; venation obscure.

Legs moderately long and rather stout; fore femora greatly incrassate, slightly incurved, narrowing towards the apex, flattened beneath, and furnished with two rows of minute setiferous tubercles.

Long. 9 mm. Lat. 2.5 mm.

Type: Female.

A single example taken in October at Plantation Diamond from the debris collected under the fibre round the bole of a cocoonut palm beside the Demerara River. I am indebted to the late Dr. Bergroth for the generic determination of this species.

Rhodnius prolixus Stal.

Rhodnius prolixus, Stal, *Berl. Ent. Zeit.*, III, 1859.

Not uncommon at Kartabo and sometimes taken at light.

Sorglana pallens (Laporte).

Macrophthalmus pallens, Stal, *E. H.*, II, 1871.

Sorglana n. n. Macrophthalmus, Kirkaldy, *Ent.*, XXXIII, 1900.

I took a single example of this species on a tree trunk, 18. 8. 22. It does not seem to be very common at the Station.

Spiniger mustelinus, sp. nov.

(Fig. 46, i).

Elongate, robust, body matt, smooth, the legs and antennae moderately hairy; head ochre yellow, with a fuscous patch at the base of the genae and gula, and a broad dark transverse band between the eyes extending back to include the ocelli; rostrum and antennae dark yellowish brown; pronotum ochre-yellow shading to orange, disc of the anterior lobe outlined with brown and with a brown U-shaped band over either shoulder; transverse sulcus brown; posterior lobe with two broad incomplete median brown bands, outside which on either side are a pair of narrower bands extending backwards from the transverse sulcus to the posterior border, and joined on each side by a broad dark band extending upwards obliquely across the base of the lateral spines; scutellum brown with a yellow border and spine; under parts dirty yellow. Abdomen pitchy brown, the first three segments spotted with pallid yellow. Elytra yellow, clouded with brown and with a dark mark on the interior margin of the membrane. Legs yellow with brown tarsi, the posterior femora and tibiae broadly marked with brown. Antennae slightly pubescent; legs and the apex of the abdomen clothed with long sparse hairs.

Head oblong, the jugae not raised, the genae obtuse at the apex; eyes large, occupying the whole side of the head; ocelli prominent and slightly elevated; antennae moderately long, first joint stout, sub-claviform, less than half the length of the second, the succeeding joints very slender and filamentous. Pronotum smooth, the anterior lobe sub-quadrate, wider than long; furnished with two long yellow outwardly diverging spines on the disc and two small conical lateral tubercles; posterior lobe wider than long, with the posterior border slightly sinuate and depressed, and the lateral margins strongly dilated and produced into two long spines. Scutellum furnished with a long semi-erect spine. Abdomen narrow at base and widening to the fourth segment; abdominal sternites 1-3 carinate; apex sharply reflexed. Elytra extending beyond the tip of the abdomen. Legs elongate, the anterior femora armed beneath with five or six minute blunt tubercles; the anterior tibiae with a few very small tubercles and a spongy fossa extending up about one-fourth of the shaft.

Long. 24 mm. Lat. 8 mm.

Type: Female.

This handsome insect belongs to the sub-genus *Acrocoris*, according to Stal's division of this large genus. I obtained two females in July and September respectively. In both cases they were running over rough sandy soil in a forest clearing. Like *S. spinidorsis* this species is an excellent mimic of certain large yellow fossorial hymenoptera which frequent the same bare gravelly places.

Spiniger nigripennis Stal.

Spiniger nigripennis, Stal, *E. H.*, II, 1871.

This species is evidently rare at Kartabo. Superficially it resembles *S.*

ater, St. F. and S.; but the genae are acute, and the thoracic spines are long as in *S. spinidorsis*. It is evidently a mimic of the black Pompilidae of the region, and moves in a wasp-like manner over the foliage of the forest trails which appear to be its haunts.

Spiniger rubropictus (H-Sch.).

Spiniger rubropictus, Stal, *Berl. Ent. Zeit.*, 1869.

This species has been recorded a few times from Kartabo.

Spiniger spinidorsis (Gray).

Spiniger spinidorsis, Stal, *E. H.*, 1871.

This magnificent insect occurs at Kartabo though apparently it is not very common there. It emits a strong though not disagreeable odour when handled. I have commented elsewhere on the resemblance of these bugs to hymenoptera. It is less striking when the insects are at rest owing to the different carriage of the wings.

S. obscuripennis, Stal is probably a variety of this species. Otherwise the Kartabo examples, which have pale spines, might be assigned to that form, although the wings are unspotted.

Melanolestes morio (Erichs.).

Melanolestes morio Stal, *O. V. A. F.*, 1866.

One record (undated).

Rasahus albomaculatus (Mayr).

Rasahus albomaculatus Stal, *E. H.*, II, 1871.

One record, 24. 7. 22. This example is a good deal smaller than that figured by Champion, but it appears to belong to this species, and Stal (*O. V. A. F.*, 1866) remarks that Mexican specimens are larger than those from South America.

Rasahus biguttatus (Say).

Rasahus biguttatus, Stal, *E. H.*, II, 1871.

Two specimens dated May, 1922. Both flew into the laboratory lamps after nightfall.

Rasahus haematus (Fabr.).

Rasahus haematus, Champion, *B. C. A.*, *Heteroptera* II, 1901.

A single example dated 5. 9. 20. The white band at the junction of the corium and clavus is confined to the margin of the corium.

Rasahus sulcicollis Serv.

Rasahus sulcicollis, Amy. Serv., *Hist. Nat. Ins. Hemipt.*

Two specimens obtained in July, 1922, seem to belong to this form.

Sirthenia stria (Fabr.).

Sirthenia stria, Stal, *H. F.*, I, 1868.

This handsome species is quite common at Kartabo, and frequently flies into the lamps after nightfall.

Champion remarks that the outer half of the femora is more or less infusate in specimens from Central America: this is also the case with those from Kartabo.

Mindarus basalis Stal.

Mindarus basalis, Stal, *E. H.*, II, 1871.

Specimens from Kartabo agree fairly well with Stal's description of this species (type from Surinam), though he describes the colour as testaceous, whereas the examples in question are of a fine coral pink.

One specimen in the collection flew to the laboratory light after dark, 9. 6. 22: the others are undated.

Pothea lugens (Fabr.).

Pothea lugens, Stal, *H. F.*, II, 1868.

This species has not yet been recorded from Kartabo. I took two examples on low herbage beside the Demerara River in October.

Zirta simillima Distant.

Zirta simillima, Distant, *Ann. Nat. Hist.*, X, 1902.

I took one example on a young *Cecropia* tree in July.

Apiomerus hirtipes (Fabr.).

Apiomerus hirtipes, Champion, *B. C. A.*, *Heteroptera*, II, 1901.

This insect is abundant in the forest round Kartabo Point, and varies considerably in colour. Some of the females have red genital appendages, abdominal expansions, and legs, while others are entirely black; but transitional forms occur, and no arbitrary distinction is possible. Likewise the males, which are smaller and of more slender build than the females, are often all black; but in some examples the femora-tibial articulations are flavous. Stal gives *A. hirtipes* Hahn, with black appendages, as a synonym of his species *nigrilobus*; but Champion does not admit this distinction, and I have followed his example and regard all these forms as varieties of *A. hirtipes* Fabr.

Apiomerus hirtipes is an active insect, but it is seldom seen upon the wing. The adults are often found crawling over timber infested with termites, or over the nests of these insects. They also hunt on foliage bordering the forest trails for other prey. I once saw one successfully impale a large black ant, transfixing it between the head and thorax. The nymphs, which are black with rufous femoro-tibial joints and sometimes with a reddish tinge on the dorsum, may be captured in termite galleries under bark, and in the younger stages are often clothed with vegetable debris. They are readily kept in captivity and their feeding habits can be studied under the microscope. When a termite is introduced into the cage, the bugs quickly become aware of its presence and show great excitement, vibrating their antennae and waving their forelegs. They then approach with deliberation, almost as if stalking their prey, and when close up they tread up and down as if groping with their feet. The antennae are not used to feel for the prey. When the tarsus has touched the termite, the bug instantly springs back to striking distance and thrusts forward rapidly with the proboscis. It then walks off leisurely with the victim impaled

on the rostrum. Sometimes two nymphs meet over the same termite. There is then great excitement—the antennae are flung back—the feet pound and stamp—and the hunters draw back with such ludicrous haste and commotion that the termite frequently eludes them both.

Calliclopius nigripes (Linn.).

Calliclopius nigripes, Stal, *H. F.*, 1868.

This well-known and conspicuous insect, “la punaise vénimeuse” of Stoll, is common at Kartabo, and may be taken on foliage in the lighter forest trails.

Heniartes flavicans (Fabr.).

Heniartes flavicans, Stal, *H. F.*, 1868.

This species has been taken several times at the Station.

Manicocoris rufipes (Fabr.).

Manicocoris rufipes, Stal, *H. F.*, 1868.

This species has been taken at Kalacoon on the other side of the Mazzaruni River, but apparently not from Kartabo.

Micrauchenus lineolus (Fabr.).

Micrauchenus lineolus, Stal, *H. F.*, 1868.

Fairly common at Kartabo in July and August, 1922. In every case the insects were resting on foliage in the trails and clearings at some height above the ground.

***Acanthiscium superbis*, sp. nov.**

(Fig. 46, c).

Moderately stout, broad, rather pubescent; head, prothorax, mesosternum, scutellum, anterior femora, lateral expansions of the abdomen, and ventral aspect of the last three abdominal segments bright geranium red; remainder of body and legs, antennae, rostrum, tylus, and a median streak between the ocelli black; elytra black with violet reflections.

Head sub-quadrangular, unarmed, somewhat tumid behind the eyes; neck long and slender, eyes very large and prominent; first joint of the rostrum equal in length to the second and third together; antennae (broken) slender, shining.

Prothorax half as long again as the head and neck together, clothed with soft light hairs; anterior lobe with a small conical tubercle on either side of the neck and two low bosses separated by a longitudinal furrow on the disc; posterior lobe sub-pentagonal, with the outer edges carinate, and somewhat expanded, and produced upwards and outwards at the lateral angles; disc traversed by two carinae which arising from the bosses of the anterior lobe, diverge as they pass backwards and then converge behind, the curved part of each carina being furnished with six black-tipped spines, of which the first and the sixth are the longest and are vertical while those intermediate are short and diverge outwards; the disc bordered by the carinae is raised into a flat-topped eminence,

sloping in front, concave and declivous behind, and somewhat inflated so as almost to conceal the scutellum which is swollen and rounded at the apex.

Abdomen rather stout, slender at the base and widening to the fourth segment, then narrowing and truncate at the apex, lateral expansions of the abdomen somewhat pronounced and upcurved, unarmed. Legs not very long, the anterior pair stout, the other two pairs slender; the anterior femora greatly incrassate, furnished with a stout spine on the trochanter and almost as long as the hind-femora, the latter not reaching the apex of the abdomen.

Elytra ample, considerably longer than the abdomen.

Long. 22.0 mm. Lat. 8.0 mm.

Type: Female.

A single example of this beautiful species (undated) has been taken at Kartabo. The semicircular spined ridges on the disc of the posterior lobe of the pronotum are distinctive.

***Debilis fraudulenta*, sp. nov.**

(Fig. 47, f).

Elongate, slender, body pubescent and the legs thickly clothed with longer stiffer hairs; fawn-brown, clouded with burnt orange on the upper surface of the abdomen; eyes red; elytra light brown; membrane and wings yellowish hyaline.

Head oblong, shorter than the prothorax, clothed below with long hairs, armed in front with two sharp stout spines; post-ocular portion somewhat swollen; eyes large, occupying the entire side of the head and with a deep transverse sulcus between them; ocelli prominent, set closely to the superior-posterior margin of the eyes; the first joint of the rostrum at least twice as long as the second and third together; antennae very elongated, the first joint more than twice as long as the second.

Pronotum granular, divided transversely by an obscure furrow; the anterior lobe small, narrow, rugose, non-tuberculate, with a deep median sulcus; the posterior lobe expanded, slightly inflated behind, furnished with two longitudinal carinae which terminate behind in short spines; lateral angles produced into rather long, outwardly directed spines; the posterior border emarginate, sharply reflexed above the scutellum which is rather large, triangular, and produced into a short stout tooth. Elytra not reaching the apex of the abdomen. Abdomen somewhat expanded at the sides, and with a pair of minute spines at the outer apical angles of segments 1-3. Legs long and slender, the hind pair the longest; anterior femora incrassate.

Long. 14 mm. Lat. 3.5 mm.

Type: Male.

Two examples obtained at Kartabo in September 1922. This form is very sluggish and lies on the upper surface of leaves in sunny places. The posterior legs and the antennae are laid back parallel with the long axis of the body, and the thickened anterior legs are folded and extended at right angles. The usual prey seems to be Jassid nymphs which are taken as they run over the leaves, but in captivity small flies are also eaten.

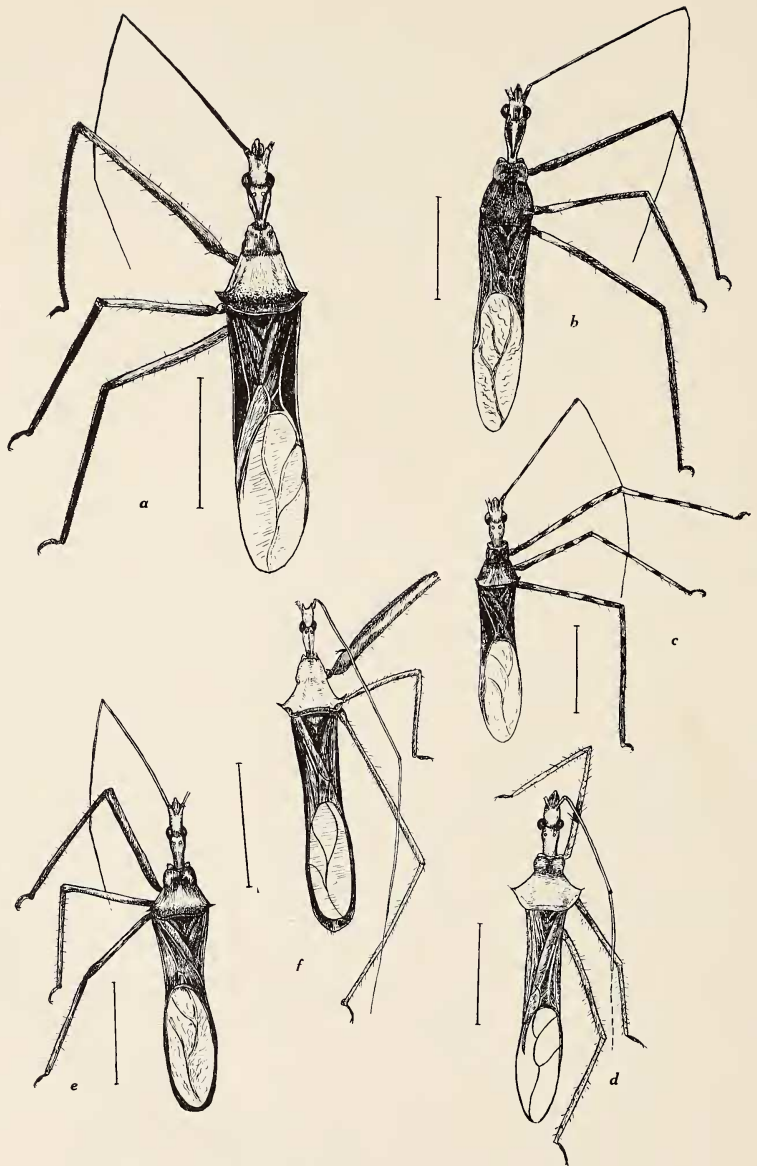


Fig. 17. a, *Zelus pallidivirens*; b, *Zelus kartabensis*; c, *Zelus araneiformis*; d, *Zelus formosus*; e, *Zelus rufigeniculatus*; f, *Debilia fraudulentula*.

Graptocleptes fasciata (Fabr.).

Graptocleptes fasciata, Stal, *H. F.*, 1868.

A mutilated example dated 28. 8. 21. seems to belong to this form.

Notocyrtus dorsalis (Gray) var. *flavolineatus* Stal.

Notocyrtus dorsalis var. *flavolineatus*, Stal *E. H.*, 1871.

Examples taken in July and September seem to be of this species though they vary a good deal in the amount of yellow on the posterior lobe of the pronotum.

Notocyrtus gibbus (Fabr.).

Notocyrtus gibbus, Stal, *H. F.*, 1868.

This interesting species is quite common at Kartabo. It haunts clearings and open bushy places where it runs actively over the foliage. It is often found sucking nectar from the extra-floral nectaries of certain plants, or sipping honey-dew spilled by Coccids or Membracids.

Notocyrtus triareatus Stal.

Notocyrtus triareatus, Stal, *O. V. A. F.*, 1859.

One example, dated June, 1920.

Montina testacea Stal.

Montina testacea, Stal, *E. H.*, II, 1871.

Has been taken occasionally at Kartabo.

***Repipta affinis*, sp. nov.**

(Fig. 46, f).

Moderately elongate, narrow, slender; head and abdomen glabrous, pronotum granular; legs and antennae with a few scattered hairs; the pleura and base of the corium clothed with a white agglutinated tomentum; pronotum dull rufus-brown; the rest of the body and elytra pale brown; the antennae darker.

Head scarcely as long as the pronotum and rather broad, tumid behind the eyes and much narrowed posteriorly; furnished with two minute blunt tubercles; antennae longer than the body and very slender.

Pronotum with two long slender spines on the disc of the posterior lobe, and from these two faint carinae extend forward to the transverse groove; lateral angles armed with shorter spines.

Scutellum rather large, pale, and toothed at the apex.

Abdomen unarmed, and not quite as long as the elytra.

Legs slender, hairy, especially the anterior pair which are slightly thickened at the base; the hind femora (when extended backwards) reaching the apex of the fifth abdominal segment.

Long. 10 mm. Lat. 2 mm.

Type: Female.

Two females taken by sweeping in August, at Kartabo and Kermaria Rapids respectively. This small inconspicuous species has much the facies of *R. mucosa* Champion, but differs in the shortness of the head spines and in other particulars.

Repipta flavicans Am. and Ser.

Repipta flavicans, Champion, B. C. A., *Heteroptera II*, 1901.

I took two examples, rather dark in colour, at Diamond Plantation (Demerara) in October, 1922.

Repipta mucosa Champion.

Repipta mucosa, Champion, B. C. A., *Heteroptera II*, 1901.

I obtained a single example in June by sweeping. The spines are slightly longer and the colour darker than the type.

Ricolla pallidinervis Stal.

Ricolla pallidinervis, Stal, O. V. A. F., 1859.

A common species, and there are records for nearly every month of the year. It frequents grassy open places, resting on the top of the herbage. When handled it emits a powerful but not unpleasant odour.

Sinea caudatum Champion.

Sinea caudatum, Champion, B. C. A., *Heteroptera II*, 1901.

I obtained a single example by sweeping beside the Demerara River in October.

Xystonyttus ichneumoneus (Fabr.).

Xystonyttus ichneumoneus, Stal, E. H., 1871.

Xystonyttus n. n. Cosmonyttus, Kirkaldy, *Can. Ent.*, 1909.

Not uncommon at Kartabo, June–September. Specimens from this district have the head, basal and apical joints of the rostrum, antennae, pronotum, metasternum, coxae, femora, tibiae, tarsi, and the apex of the abdomen black; the pronotum, scutellum, metasternum, and proximal segments of the abdomen are bright orange red; the base of the second rostral joint and an annulation on the first and third pairs of femora are dirty white.

Xystonyttus nugax (Burm.).

Xystonyttus nugax, Stal, E. H., 1871.

Xystonyttus n. n. Mycoris Burmeister, and *Cosmonyttus* Stal, Kirkaldy, *Can. Ent.*, 1909.

These Ichneumonid-like Harpactorinae are difficult to determine, especially as the types have often been described from what are evidently faded specimens. An example of this form from Kartabo has the thorax, underparts, and fore-femora bright orange yellow; the hind-femora are flavous with darker rings; and the ventral surface of the posterior abdominal segments is clouded with black.

Zelus (Diplodus) araneiformis, sp. nov.

(Fig. 47, e).

Elongate, moderately robust, rather hirsute; head pale castaneous red; pronotum pitchy brown, emarginated behind with pale testaceous; abdomen pitchy brown above, paler below, the first six segments decorated on each side with two white tomentose patches; elytra brown, with paler venation, rather longer than the abdomen; antennae and legs pale chestnut, conspicuously annulated with dark brown.

Head oval, pubescent, shorter than the thorax, somewhat swollen behind the ocelli; antennae longer than the body. Pronotum with the anterior lobe rough and sulcate; posterior lobe granular, pubescent, with two faint median carinae; depressed at the outer margin and with the lateral angles furnished with a very small forward-projecting yellow tooth. Scutellum bristly, triangular, depressed at the apex.

Legs rather long, equal in length, with scattered hairs.

Long. 10 mm. Lat. 2 mm.

Type: Female.

One taken on foliage at Kartabo, 9. 9. 22. The ringed legs and antennae are conspicuous and give the insect when in the resting position some resemblance to a spider.

Zelus erythrocephalus Fabr.

Zelus erythrocephalus, Stal, *H. F.*, 1869.

The type of this species was a male, and two of that sex which agree very well with Stal's description were taken at Kartabo. Two females of this species, collected in June, resemble the males but are of larger size. In both sexes the anterior wall of the prothorax is ferruginous brown like the head. This insect, with others of the same genus, frequents sunny trails and clearings in secondary growth.

Long. Male: 13.0 mm. Female: 18.0 mm.

Lat. Male: 1.5 mm. Female: 2.0 mm.

Zelus (Diplodus) formosus, sp. nov.

(Fig. 47, d).

Somewhat robust, dull, coarsely granular; legs glabrous with a few scattered hairs; head and antennae fuscous, with a V-shaped mark behind the eyes and extending along the neck; pronotum apricot-yellow with a broad ill-defined band across the posterior lobe between the lateral spines; scutellum ochreous; abdomen yellow, with the last four tergites infuscate; legs yellow, with the tarsi and a ring round the femur dark brown; elytra yellow, with the clavus and membrane clouded with brown.

Head elongate, slightly tumid and then narrowing behind the eyes. Pronotum longer than the head; the anterior lobe rugose, sulcate down the middle, and with the anterior angles bluntly tuberculate; posterior lobe rough, with a very small lateral spine or tooth and the posterior border emarginate.

Scutellum sub-triangular, slightly toothed at the apex.

Elytra quite as long as the abdomen.

Legs rather short, the anterior femora a little longer but scarcely thicker than the posterior.

Long. 14 mm. Lat. 3 mm.

Type: Female.

A single individual taken on foliage at Kartabo in August. An unnamed example in the British Museum (collected by Bates in Santarem) differs only on the more distinct annulation of the femora.

***Zelus (Diplodus) kartabensis*, sp. nov.**

(Fig. 47, b).

Moderately elongate, rather robust, dull, punctate, pitchy-brown, with patches of white tomentum on the underparts; head dilute ochreous, with a dark median patch in front of the eyes and two obscure streaks extending from the posterior margins of the eyes along the neck; rostrum and antennae black; sides of thorax and coxae, lateral expansions of the abdomen, a median line along the ventrum, the proximal two-thirds of the eighth sternite, and a ring at the base of the second and third pairs of femora, pale ochreous-green.

Head elongate, oblong, the post-ocular as long as the ante-ocular portion, neck cylindrical, ocelli rather prominent; antennae very long and slender, first joint a little thickened. Pronotum with the anterior lobe smooth, obscurely sulcate and tuberculate in front; the posterior lobe coarsely granulate with indications of two longitudinal diverging carinae; posterior border emarginate and somewhat produced over the scutellum; lateral angles toothed. Scutellum triangular, terminating in a small peg-like process. Eighth abdominal sternite large, boat-shaped. Elytra not quite as long as the abdomen. Legs long and slender, the anterior femora slightly incrassate and longer than the two posterior pairs.

Long. 13 mm. Lat. 3.0 mm.

Type: Male.

Four males of this form were taken by sweeping in Kartabo clearing in August. I cannot identify them by any published description and therefore describe them as new.

Zelus nugax Stal.

Zelus nugax, Stal, *Stett. Ent. Zeit.*, 1862.

This species varies somewhat in the colour and the length of the spines. Two examples taken near Georgetown in October resemble slender short-spined Central American specimens. In life the dorsal surface of the abdomen and the underparts are chestnut, and the lateral expansions of the abdomen are dirty green; but these colours fade, and in any case they are variable. Three examples collected at Kartabo in July and August are much darker in colour, especially as regards the underparts and legs.

Zelus (Diplodus) pallidinervus, sp. nov.

(Fig. 47, a).

Elongate, moderately robust, dull, granular; head and prothorax clothed with very short stiff black hairs. Head green with a dark V-shaped mark behind the eyes; antennae and apical joint of the rostrum black. Prothorax apple-green with a transverse dark mark across the posterior lobe behind the spines. Scutellum and underparts green. Dorsum of the abdomen orange red, clouded with brown; lateral expansions of the abdomen green. Elytra testaceous with the corium and part of the clavus dark brown; veins broad and conspicuous, pale yellow. Femora pale green; tibiae and tarsi blackish.

Head oblong, elongate, antennae very long and slender. Prothorax with the anterior lobe sulcate and the anterior angles rounded; the posterior lobe faintly pilose, provided with two small lateral spines and with the posterior border emarginate. Scutellum triangular, terminating in a short tooth. Elytra just reaching beyond the apex of the abdomen. Legs long, the anterior pair considerably the longest; the anterior femora slightly incrassate.

Long. 17 mm. Lat. 3.5 mm.

Type: Female.

Four females were taken at Kartabo in August, on foliage in open places. This species is darker and more robust than *Z. laevicollis* Champion and differs from the description of *Z. sphegeus* Fabr. in the shorter thoracic spines, and in the conspicuous pale venation of the elytra which is its most distinctive character.

Zelus sphegeus Fabr.

Zelus sphegeus, Stal, *H. F.*, 1868.

This pretty insect is fairly common at Kartabo on leaves in open bushy places. It is not unlike *Z. exsanguis*, but differs in the sculpture of the anterior lobe of the pronotum. Stal's description evidently applies to a dried specimen. In life the colours are: head and underparts yellowish-green; prothorax yellowish-green, marked behind the disc of the posterior lobe with black; dorsum of the abdomen rich chestnut orange; coriaceous portion of the hemielytra chestnut; antennae and legs black; the coxae and proximal third of the femora greenish-yellow.

Zelus (Diplodus) rufigeniculatus, sp. nov.

(Fig. 47, e).

Slender, elongate, not robust, rather hirsute; head and thorax purplish brown; dorsum of abdomen dull red with an indefinite median green line; underparts apple green; legs pale green with reddish femoro-tibial joints; antennae fuscous; ocelli red. Head oblong, with silvery pubescence, not quite as long as the pronotum; neck cylindrical and rather stout.

Pronotum with the anterior lobe with two somewhat pronounced tubercles at the anterior angles, sulcate in the middle and laterally decorated with white pilose lines and patches; posterior lobe punctate, rough, emarginate, faintly

bi-carinate on the disc and furnished at the lateral angles with two short black spines. Scutellum triangular, blunt, and slightly upturned at the apex. Elytra as long as the abdomen. Legs rather short, anterior femora a little swollen before the apex.

Long. 14 mm. Lat. 2.5 mm.

Type: Female.

Two examples taken at Canje Creek, Berbice, in October.

Zelus (Diplodus) tristis, sp. nov.

Slender, elongate, deep fuscous brown; head, margin of pronotum and lateral expansions of the thorax dull testaceous; an obscure V-shaped dark mark behind the eyes; antennae black; legs deep testaceous, ringed with black.

Head elongate, the ante-ocular portion much shorter than the post-ocular, a little tumid behind the eyes; ocelli prominent; pronotum with the anterior lobe smooth, dull, sparsely pubescent; sulcate in the median line, with the anterior angles rounded; posterior lobe coarsely granular and punctate, with two obscure median carinae; margins carinate and rather depressed; lateral angles armed with a very small tooth.

Scutellum pale, triangular, depressed at the apex.

Elytra rather longer than the abdomen, pale brown. Legs comparatively short; the anterior tibiae thickly, the posterior pairs more sparsely pilose; the anterior femora considerably the longest and slightly thickened at the base.

Long. 10 mm. Lat. 2 mm.

Type: Male.

A single example taken by sweeping in the forest in July. Superficially this species resembles a dark example of *Z. araneiformis* but differs from it in that the post-ocular portion of the head is more flattened, the thorax and the legs are more hairy, and the scutellum and anterior lobe of the thorax differ slightly in sculpture.